If, therefore, in iho production of a gas, the atmosphere, i.e., air, in employed, HO must nitrogen be present in the gas; further, It must prove oxygon in its free or combined form; and lastly, tho quantity of nitrogen which is derived from, the air, and the quantity of oxygen derived from the same source to he in a specified ratio, which is iixod according to tho formula

N=«-7620 . . . (1)

As the relative ratios of 0 and N in later calculations must meet with frequent consideration, a table of the nitrogen volumes for values of 1 to 1,000 0 has been drawn up, which is annexed sis a supplement, and from which one can derive for each desired value of 0 or N (within those limits) the value of N or ().

Now atmospheric, air is almost newer dry, but generally contains certain quantities of water-vapour, which depend on the temperature and degree of saturation of the air with water-vapour, and from this admit of calculation. In the tables to be* used for this are usually given tho quantities of vapour which are contained in tho volume or weight unit of the moist air mixture, at saturation point of moisture. .But It is more convenient hero for the performance of these calculations to know the figures which specify tho quantities of vapour that 1 cubic, metre of dry air at 0" and 700 millimetres preHBurts in able to take up, when this amount of air Ls warmed up to highctr tenjperaturen, K. II. WWHH gives the following figures In bin book, ** Condensation/' p. U23 :—

1 kilogramme air can take up mointuro an follows at temperature^ given :~

o1 iu tio- ,*jO' -lo"

<M«W7 CH107.1 O'OHI OMWiH 0'<H77 kilogramme

Whcvnifrom ctonHidering that 1 cubic metre air at 0" and 7f»0 inilllmetreH ptmsuro weighs 1"42!KH kilogninnnc.H, and .1. ctubic nietri! water-vapour at 0 and 700 millimetres munt weigh 0*8051 kilogramme, it follows that 1 cubic measure dry

iiir can tuku up at :-—

M*»iMur«Mito-umi <r 10" 4JO'8 ,'!«)' -ur 7<»t>

willinH'lntw . O'tlU.'la 0'(M)7l) U'OiOU CH)2;)7 0'(>J«)H cuhir inntro.